

ADDENDUM NO. 1

DATE: September 10, 2018

PROJECT: City of Milan Utility Infrastructure Improvements and Extension

OWNER: City of Milan

BID DATE: Tuesday, September 25, 2018

The following shall be incorporated into the Contract Documents dated **8 August 2018**

PROJECT MANUAL

BID FORM

Delete paragraph 6.1

01 10 00 - SUMMARY

Revise dates to match bid form dates, remove text in section 3.B.1. regarding dewatering.

33 31 23 – SANITARY SEWORAGE FORCE MAIN PIPING

2.1. A 3 a. Designation for DIP is clarified to Thickness Class 52

2.1 E Add paragraph on Polyethylene Encasement

43 25 13 – OVERHUNG CLOSE COUPLE SUBMERSIBLE CENTERIFUGAL CHOPPER PUMPS

Add Specification to the project manual.

SPECIAL PROVISION – CURED –IN-PLACE SEWER LINING

C. Modify language to Omit reference to Appendix A.

F. Modify language to Omit reference to leaks.

End of Addendum No. 1

SECTION 43 25 13 - OVERHUNG CLOSE-COUPLED SUBMERSIBLE CENTRIFUGAL PUMPS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Submersible "Chopper" type pumps.
- B. Related Requirements:
 - 1. Section 26 05 03 - Equipment Wiring Connections: Execution requirements for electrical connections to equipment specified by this Section.
 - 2. Section 40 05 13 - Common Work Results for Process Piping: Piping components, appurtenances, and identification requirements common to process piping systems.
 - 3. Section 43 05 20 - Common Work Results for Liquid Handling Systems: Administrative and basic requirements for pumping systems.
 - 4. Section 43 05 53 - Identification for Process Gas and Liquid Handling Equipment: Labels as required by this Section.
 - 5. Section 46 05 13 - Common Motor Requirements for Water and Wastewater Equipment: Execution requirements for motors supplied with equipment specified by this Section.

1.2 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM A48 - Standard Specification for Gray Iron Castings.
 - 2. ASTM A48M - Standard Specification for Gray Iron Castings.
 - 3. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.3 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
 - 1. Coordinate Work of this Section with installation of process piping.

1.4 SCHEDULING

- A. Section [013000 - Administrative Requirements] [013216 - Construction Progress Schedule]: Requirements for scheduling.
- B. Schedule Work of this Section prior to connecting piping work.

1.5 SEQUENCING

- A. Section 01 10 00 - Summary: Requirements for sequencing.
- B. Sequence Work of this Section to prevent interference with Owner's operation
- C. .

1.6 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

chopper impeller. The overall pump design shall have the ability to chop or condition scum, rags or other fibrous material without plugging.

2. Pump and motor assembly shall not require an external oil level monitor and shall be fully warranted without such a device.
3. Capable of continuous submergence underwater without loss of watertight integrity to depth of 65 feet.

C. Impeller and Volute:

1. Impeller: The hydraulic design of the impeller shall combine the action of a semi-open centrifugal impeller with the action of a fixed and a rotating blade to chop and/or condition the incoming solid materials
 - a. Hardened ductile iron or hardened ASTM A148 cast steel alloy.
 - b. Dynamically balanced.
 - c. Two-vane design, capable of passing minimum 3-inch solid sphere.
2. Volute: Single piece, shall be ASTM A536 ductile iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. Discharge flange shall match ANSI B16.1 standard dimensions.
3. Shaft: Stainless steel.
4. Mechanical Seal System:
 - a. Shaft Seal: Tandem mechanical type. Two independently-mounted mechanical face type seals shall be provided. The inner and outer seals shall be separated by an oil filled chamber.
 - b. Seal Face Material: Outer seals - Tungsten-carbide or silicon-carbide. Inner seals – carbon and ceramic.
 - c. Provide a moisture sensing probe into the oil chamber located between the outer and inner seal to detect and alarm should the outer seal fail.

D. Bearings:

1. Rotate shaft on two permanently lubricated bearings.
2. Bearings shall be ball, single row, deep groove type.
3. Provide minimum L10 rating life of 17,500 hours.

E. Cable Entry Seal:

1. The power cable and cap assembly shall be designed to prevent moisture from wicking through the cable assembly even when the cable jacket has been punctured.
2. Power and control cable entry into the lead connection chamber shall be epoxy encapsulated for positive moisture sealing.
3. A Buna-N power and control cable grommet shall be provided in addition to the epoxy to the epoxy sealed leads.

F. Guide and Fittings:

1. Discharge Connection Elbow: Permanently installed in chamber with discharge piping.
2. Connection: Automatic to discharge connection elbows when lowered into place, and easily removed for inspection or service.
3. Guide Bracket:
 - a. Integral part of pump unit.
 - b. Entire weight of pump unit guided by not less than two guide bars, and pressed tightly against discharge connection elbow with metal-to-metal contact. Guide bars, bracket, expansion anchors and fasteners shall be Type 304 stainless steel.
4. Do not permit any portion of pump to bear directly on floor of sump.

G. Electrical:

1. Electrical Characteristics: As specified in Section 26 05 03 - Equipment Wiring Connections and following:
 - a. Plank Road Station: 10HP; W. Main Street Station: 7.5 HP.
 - b. Voltage: 240 V, three phase, 60 Hz.

2. Pump Motor: As specified in Section 46 05 13 - Common Motor Requirements for Water and Wastewater Equipment and following:
 - a. Designed for continuous duty, completely or partially submerged. Squirrel cage, induction, shell type design housed in either an air-filled or oil-filled, water-tight chamber, NEMA Design B, Class F insulation, Class I, Division 1, Group D explosion-proof. Combined service factor of at least 1.10. Protect motor from high temperatures and moisture intrusion by providing sensors for each in the motor housing which will shut down the pump and trip an alarm to the control panel.
 - b. Non-overloading throughout entire pump performance range based on 1.0 service factor.
 - c. Continuous duty, capable of sustaining minimum of 10 starts per hour.
 - d. Stators:
 - 1) Dipped and baked at least twice in Class F varnish.
 - 2) Heat-shrink-fitted into stator housings.

H. PUMP CONTROLS

1. Control Panel:
 - a. Construction: NEMA 4X weather-proof stainless steel. Dead front with hinged inside panel for support of inner-door mounted components. Provide door with quick disconnect latches, lock hasp, lock, and four keys.
 - b. Provide internal space for mounting the SCADA vendor's panel and associated connections.
 - c. Electrical Service to Panel: 240 volt, three-phase, three-wire, 60 Hz.
 - d. Main panel disconnect with external operating handle linked to thermal-magnetic main circuit breaker.
 - e. 240 VAC Surge Arrestor.
 - f. Adjustable magnetic trip type circuit breakers for protection of each motor.
 - g. Magnetic starters with three ambient compensating overload relays for each pump motor. Provide one spare N.O. auxiliary contact for "Pump Running" and from the overload relay for remote alarm monitoring.
 - h. At Plank Road Station, provide space for mounting a third future magnetic circuit breaker and contactor.
 - i. Fused 120 V control circuit transformer (fused on all ungrounded legs) for the master control circuit. Master control circuit shall provide automatic level control and alternation of pumps. Control transformer shall be sized for a minimum of 300 VA, and rated for at least 200 percent of the calculated maximum control circuit loading.
 - j. HOA selector switch for each pump.
 - k. Provide a factory-mounted 120/240 volt, single-phase, dry type transformer on the exterior side wall of the control panel. Transformer shall have a 115 degree C rise rating and shall be suitable for outdoor installation. Include two three-pole, thermal-magnetic circuit breakers for protection and disconnect of the transformer primary and secondary windings. Use transformer for support of 120 VAC loads internal and external to the control panel, excluding the pump control circuit.
 - l. Provide molded case circuit breakers for each of the following circuits:
 - 1) Thermostat heating strips; 10 amperes
 - 2) Lighting fixture and duplex outlet in the Plank Road Vault; 15 amperes.
 - 3) Telemetry equipment; 15 ampere.
 - 4) Fan in Plank Road Valve vault; 15 ampere.
 - 5) Two spare 15 ampere, single-pole circuit breakers.
 - m. Provide a latching relay to energize inside panel mounted pilot lights and lock out all pumps on a low level alarm condition. Provide circuitry to automatically reset the alarm when the pressure transducer activates the "lead pump on" setting. Low level lockout shall also be able to be manually reset by pressing the RESET pushbutton.
 - n. Submersible Level transducer. (Furnished by SCADA vendor and installed by Contractor.) Contractor to install using with a 5-pound minimum weight suspended on a stainless steel chain.

- o. Independent floats for High Level Alarm and Low Level Alarm and Pump Lockout. Floats shall start and stop pumps.
 - p. Push to Test Pilot Lights for Pump Running, High Level, Low Level, High Temperature and Seal Leak.
2. Controller:
- a. Pump control functions shall be provided in the SCADA vendor's RTU. The RTU shall be furnished by the SCADA vendor and installed by the Contractor.
 - b. The pressure transducer shall be furnished by the SCADA vendor and installed by the Contractor. Pressure transducer actuated lead-lag pump-down control. Include automatically starting a lag pump if lead pump cannot keep up with inflow.
 - c. Connect winding overheat thermostats and seal fail circuits via intrinsically safe relays. If the seal fail system utilizes current detection across a probe assembly, coordinate with manufacturer for use of the proper seal-leak detection relay.
 - d. Provide the following time delays in the control:
 - 1) Time delay to prevent simultaneous starting of pumps.
 - 2) Time delay for 60 second delay in activation of the seal leak shutdown and alarm.
 - 3) Time delay of 10 seconds for activation of the winding overheat shutdown and alarm.
 - e. Provide I/O terminals for the telemetry system for the following signals:
 - 1) Pump No. 1 Running.
 - 2) Pump No. 2 Running.
 - 3) Pump No. 3 Running. (Plank Road Station Only)
 - 4) Call Pump No. 1.
 - 5) Call Pump No. 2.
 - 6) Call Pump No. 3. (Plank Road Station Only)
 - 7) Pump No. 1 Winding Overheat.
 - 8) Pump No. 2 Winding Overheat.
 - 9) Pump No. 3 Winding Overheat. (Plank Road Station Only)
 - 10) Pump No. 1 Seal Failure.
 - 11) Pump No. 2 Seal Failure.
 - 12) Pump No. 3 Seal Failure. (Plank Road Station Only)
 - 13) High Level Alarm.
 - 14) Low Level Alarm.
 - 15) Pumping Station Power Failure.
- I. Accessories:
- 1. Power and Signal Cable: Sized according to NEC standards and of sufficient length to reach the junction box without splices. Oil-resistant outer jacket of chloroprene rubber capable of continuous submergence without loss of water-tight integrity to a depth of 65 feet. Provide cable with strain relief and a positive water-tight entry into the motor housing.
 - 2. Lifting Chain:
 - a. Material: Stainless steel.
 - b. Strength: Sufficient to permit raising and lowering of pump.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 77 00 - Closeout Procedures: Requirements for installation examination.
- B. Verify layout and orientation of pumps, accessories, and piping connections.

3.2 INSTALLATION

- A. Install pumps and accessories where indicated on Drawings and according to manufacturer's instructions.
- B. Provide and connect piping, accessories, and power and control conduit and wiring to make system operational, ready for startup.
- C. Flush piping with clean water.

3.3 FIELD QUALITY CONTROL

- A. Section 01 77 00 - Closeout Procedures: Requirements for testing, adjusting, and balancing.
- B. Pre-operational Checks:
 - 1. Check pump and motor alignment.
 - 2. Check for proper motor rotation.
 - 3. Check pump and drive units for proper lubrication.
- C. Startup and Performance Testing:
 - 1. Operate pump using clean water at design point for continuous period of two hours, under supervision of manufacturer's representative and in presence of Architect/Engineer.
- D. Verify pump performance by performing time-drawdown test or time-fill test.
- E. Check pump and motor for high bearing temperature and excessive vibration.
- F. Check for motor overload by taking ampere readings.
- G. Equipment Acceptance:
 - 1. Adjust, repair, modify, or replace system components that fail to perform as specified, and rerun tests.
 - 2. Make final adjustments to equipment under direction of manufacturer's representative.
 - 3. Document adjustments, repairs, and replacements in manufacturer's field services certification.
- H. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than <2> days on-Site for installation, inspection, field testing, and instructing Owner's personnel in maintenance of equipment.
- I. Furnish installation certificate from equipment manufacturer's representative attesting equipment has been properly installed and is ready for startup and testing.

3.4 DEMONSTRATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for demonstration and training.
- B. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

END OF SECTION 43 25 13